

What is Claimed is:

1. A purified polypeptide comprising an amino sequence selected from the group consisting of:
 - SEQ ID NO:2;
 - a variant of SEQ ID NO:2;
 - a fragment of SEQ ID NO:2;
 - an amino acid sequence encoded by an isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:
 - SEQ ID NO:1;
 - a variant of SEQ ID NO:1; and
 - a fragment of SEQ ID NO:1.
2. The purified polypeptide of claim 1 wherein the polypeptide is encoded by a fragment of SEQ ID NO:1 comprising nucleotides 455 through 1018.
3. The purified polypeptide of claim 1 wherein the polypeptide is an agonist or antagonist that specifically binds to a mast cell-expressed membrane protein or its ligand and inhibits or activates the protein's cellular function.
4. The purified polypeptide of claim 3 wherein the polypeptide is an antagonist selected from the group consisting of soluble forms of mast cell-expressed membrane proteins and soluble polypeptides derived from the extracellular domains of mast cell-expressed membrane proteins that are capable of interfering with the ability of a mast cell-expressed membrane protein to interact with its natural ligand.
5. The purified polypeptide of claim 4 comprising an amino acid sequence selected from the group consisting of amino acids 106 to 187 of SEQ ID NO:2 or antagonist fragments thereof.
6. The purified polypeptide of claim 3 wherein the agonist or antagonist is an antibody.
7. The purified polypeptide of claim 6 wherein the antibody is selected from the group consisting of polyclonal, monoclonal, humanized, human, bispecific, and heteroconjugate antibodies.
8. The purified polypeptide of claim 6 wherein the antibody is a monoclonal antibody.
9. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:
 - SEQ ID NO:1;
 - a variant of SEQ ID NO:1;
 - a fragment of SEQ ID NO:1;
 - a nucleotide sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of:
 - SEQ ID NO:2;
 - a variant of SEQ ID NO:2;
 - a fragment of SEQ ID NO:2.
10. The isolated polynucleotide of claim 9 comprising a nucleotide sequence that encodes a polypeptide having an amino acid sequence selected from the group consisting of amino acids 106 to 187 of SEQ ID NO:2 or fragments thereof.
11. An expression vector comprising the nucleotide sequence of claim 9.

12. An isolated host cell selected from the group consisting of a host cell comprising the expression vector of claim 11; a host cell comprising the nucleotide sequence of claim 9; and a host cell comprising the nucleotide sequence of claim 10.
13. A screening method for identifying mast cell-expressed membrane protein agonists and antagonists, comprising:
 - exposing a mast cell-expressed membrane protein to a potential mast cell-expressed membrane protein agonist/ antagonist; and
 - determining whether the potential agonist/antagonist interacts with the protein.
14. A screening method for determining whether pharmaceuticals are likely to cause undesirable side effects associated with reducing or increasing mast cell activity when administered to a mammal for the desired indication, comprising:
 - exposing mast cells expressing mast cell-expressed membrane proteins or a purified mast cell-expressed membrane protein to a pharmaceutical; and
 - determining whether the pharmaceutical interacts with the protein or mimics the biological function of the protein ligand.
15. A method for blocking or modulating the expression of a cellular mast cell-expressed membrane protein by interfering with the transcription or translation of a DNA or RNA polynucleotide encoding the mast cell-expressed membrane protein comprising exposing a cell capable of expressing a mast cell-expressed membrane protein to a molecule that interferes with the transcription or translation of a DNA or RNA polynucleotide encoding the mast cell-expressed membrane protein.
16. The method of claim 14 wherein the molecule is selected from the group consisting of antisense nucleotides, RNAi nucleotides, and ribozymes that interfere with the proper transcription or translation of a DNA or RNA polynucleotide encoding the mast cell-expressed membrane protein.
17. The method of claim 14 wherein the molecule is an antisense nucleotide that interferes with the proper transcription or translation of a DNA or RNA polynucleotide encoding the mast cell-expressed membrane protein.
18. A method for diagnosing the predisposition of a patient to develop diseases caused by unwanted activity of cells expressing mast cell-expressed membrane proteins, comprising:
 - collecting a cell, tissue, or body fluid sample known to contain few if any mast cell-expressed membrane proteins from a patient;
 - analyzing the tissue or body fluid for the presence of mast cell-expressed membrane proteins in the tissue; and
 - predicting the predisposition of the patient to certain immune diseases based upon the presence of mast cell-expressed membrane proteins in the tissue or body fluid.
19. The method of claim 18 wherein the cells expressing mast cell-expressed membrane proteins are mast cells and the unwanted activity is mast cell degranulation.
20. A method for diagnosing the predisposition of a patient to develop diseases caused by unwanted activity of cells expressing mast cell-expressed membrane proteins, comprising:
 - collecting a cell, tissue, or body fluid sample known to contain a defined level of mast cell-expressed membrane proteins from a patient;

analyzing the tissue or body fluid for the amount of mast cell-expressed membrane protein in the tissue;
and

predicting the predisposition of the patient to certain immune diseases based upon the change in the amount of mast cell-expressed membrane protein in the tissue or body fluid compared to a defined or tested level established for normal cell, tissue, or bodily fluids.

21. The method of claim 20 wherein the cells expressing mast cell-expressed membrane proteins are mast cells and the unwanted activity is mast cell degranulation.
22. A method for preventing or treating mast cell-expressed membrane protein mediated diseases in a mammal comprising administering a disease preventing or treating amount of a mast cell-expressed membrane protein agonist or antagonist to the mammal.
23. The method of claim 22 wherein the mast cell-expressed membrane protein agonist or antagonist is an antibody.
24. A diagnostic method for detecting mast cell-expressed membrane proteins expressed in specific cells, tissues, or body fluids, comprising:
 - exposing cells, tissues, or body fluids or their components to an antibody that binds to a mast cell-expressed membrane protein; and
 - determining if the cells, tissues, or body fluids or their components bind to the antibody.
25. A method for producing an antibody that binds to mast cell-expressed membrane proteins, comprising a method selected from the group consisting of:
 - using isolated mast cell-expressed membrane proteins or antigenic fragments thereof as an antigen;
 - using host cells that express recombinant mast cell-expressed membrane proteins as an antigen; and
 - using DNA expression vectors containing the mast cell-expressed membrane protein gene to express the mast cell-expressed membrane protein as an antigen for producing antibodies.
26. The antibody produced using the method of claim 25.
27. The antibody of claim 25 selected from the group consisting of polyclonal, monoclonal, humanized, human, bispecific, and heteroconjugate antibodies.
28. A method for isolating and purifying mast cell-expressed membrane proteins from recombinant cell culture, contaminants, and native environments, comprising:
 - exposing a composition containing mast cell-expressed membrane proteins and contaminants to an antibody capable of binding to the mast cell-expressed membrane proteins;
 - allowing the mast cell-expressed membrane proteins to bind to the antibody;
 - separating the antibody-mast cell-expressed membrane protein complexes from the contaminants; and
 - recovering the mast cell-expressed membrane proteins from the complexes.
29. The method of claim 28 wherein the antibody is an antibody of claim 25.
30. A transgenic knockout animal whose genome comprises a heterozygous or homozygous disruption in its endogenous mast cell-expressed membrane protein gene that suppresses or prevents the expression of biologically functional mast cell-expressed membrane proteins.
31. A vaccine useful for immunizing a mammal against mast cell or other mast cell-expressed membrane protein mediated diseases comprising a pharmaceutically acceptable carrier and one or more mast cell-expressed membrane proteins or immunogenic fragments thereof.

32. A method for immunizing a mammal against mast cell or other mast cell-expressed membrane protein mediated diseases comprising injecting one or more mast cell-expressed membrane proteins or immunogenic fragments thereof into the mammal.
33. A vaccine useful for immunizing a mammal against mast cell or other mast cell-expressed membrane protein mediated diseases comprising a pharmaceutically acceptable carrier and a vector containing a nucleic acid sequence encoding a mast cell-expressed membrane protein or antigenic fragment thereof.
34. The vaccine of claim 33 wherein the nucleic acid sequence is a sequence selected from the group consisting of SEQ ID NO:1; a variant of SEQ ID NO:1; and a fragment of SEQ ID NO:1.
35. A method for immunizing a mammal against mast cell or other mast cell-expressed membrane protein mediated diseases comprising injecting a pharmaceutically acceptable carrier and a vector containing a nucleic acid sequence encoding a mast cell-expressed membrane protein or antigenic fragment thereof.
36. The method of claim 35 wherein the nucleic acid sequence is a sequence selected from the group consisting of SEQ ID NO:1; a variant of SEQ ID NO:1; and a fragment of SEQ ID NO:1.